



REPORT OF GEOTECHNICAL EXPLORATION

RaceWay Thomasville

Thomasville, Thomas County, Georgia

Contour Project No: G22RAC08

July 28, 2022

Prepared For:

RaceTrac Petroleum, Inc.

200 Galleria Parkway SE

Suite 900

Atlanta, Georgia 30339

July 28, 2022

RaceTrac Petroleum, Inc.
200 Galleria Parkway SE
Suite 900
Atlanta, Georgia 30339

Attn: Kathryn Whitaker

Reference: Report of Geotechnical Exploration
RaceWay Thomasville
Thomasville, Thomas County, Georgia
Contour Project No: G22RAC08

Dear Kathryn,

Contour Engineering, LLC (Contour) has completed the geotechnical exploration for the referenced project. The following report includes a summary of the project information and the findings from our subsurface investigation and evaluation.

We appreciate the opportunity to work with you on this project and look forward to assisting you with any future projects. Should you have any questions regarding this report or if we may be of further service, please contact our office.

Sincerely,
Contour Engineering, LLC



James Sparks
Project Geologist



Digitally signed by William G
Faircloth
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William G. Faircloth, Jr., P.E.
Principal Engineer
GA P.E. Reg. No. 034615

Copies Submitted Via Email: Addressee

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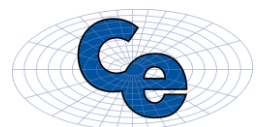
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Important Information about This Geotechnical-Engineering Report



1.0 EXECUTIVE SUMMARY

Site and Project Description: The site is located immediately at the southwest corner of the intersection of US Highway 84 and GA State Highway 3 in Thomasville, Thomas County, Georgia. The site is currently undeveloped and heavily wooded. The site is bounded by US Highway 84 to north, GA Highway 3 to the east and to the west by a power line easement. Site ground elevations range from 228 feet above mean sea level in the southeast portion of the site to 250 feet in the northwest portion of the site.

We understand that the proposed project will include the construction of a new RaceWay Market and Truck stop. The proposed project will include the construction of a new 3,500 square foot RaceWay market, 8 island car and light truck pump station with canopy, 4 island over the road tractor – trailer pump station with canopy, new underground storage tanks, dumpster area, and associated drive isles with parking and four entrance/exits. Provided grading information shows that cut and fill across site will be less than 5 feet. We were not provided with structural loading information at the time of this study, therefore; we have assumed that wall and column loads will not exceed 3 kips per linear foot and 200 kips, respectively.

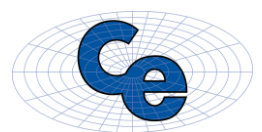
Subsurface Conditions: The soil test borings encountered Coastal Plain soils to their planned termination depths ranging from 10 to 20 feet below the existing ground surface.

High Plasticity Clays: High plasticity clays were encountered in the top 5 feet of borings B-2 and I-1. If these soils are encountered in any footings during grading operation, they will need to be undercut to a depth of at least two feet below finished grade and replaced with well-compacted structural fill or well-compacted graded aggregate base (GAB). These soils are also not suitable for reuse in structural areas. If encountered in excavations, they may be utilized in non-structural (i.e., grassed areas) or should be wasted offsite.

Site Preparation: Prior to the commencement of construction, existing fill, vegetation, topsoil, debris, and any other non-soil deleterious materials that fall within the limits of the proposed construction should be removed. Upon completion of the clearing and stripping, all subgrade areas should be proof-rolled with a 20-ton loaded tandem-axle dump truck.

Foundation Recommendations: After completion of recommended site preparation, the proposed buildings may be supported on conventional shallow foundation systems. A maximum allowable net bearing pressure of 2,500 pounds per square foot may be used for the design of the shallow foundation systems bearing on residual soils and/or properly evaluated structural fill.

Seismic Recommendations: Based on the 2018 International Building Code (IBC), boring data, and the geological features of the Coastal Plain Physiographic Province of Georgia, it is our opinion that the Seismic Site Classification for the project site is "D". The soil profile named "Stiff Soil Profile" was determined from Chapter 20 of ASCE-7.



2.0 INTRODUCTION

2.1 Site and Project Description

The site is located on the southwest corner of the intersection of US Highway 84 and GA State Highway 3 in Thomasville, Thomas County, Georgia. The site is currently undeveloped and heavily wooded. Site ground elevations range from 228 feet above mean sea level in the southeast portion of the site to 250 feet in the northwest portion of the site.

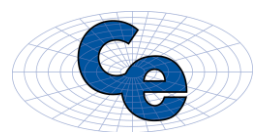
We understand that the proposed project will include the construction of a new RaceWay Market and Truck stop. The proposed project will include the construction of a new 3,500 square foot RaceWay market, 8 island car and light truck pump station with canopy, 4 island over the road tractor – trailer pump station with canopy, new underground storage tanks, dumpster area, and associated drive isles with parking and four entrance/exits. Provided grading information shows that cut and fill across site will be less than 5 feet. We were not provided with structural loading information at the time of this study, therefore; we have assumed that wall and column loads will not exceed 3 kips per linear foot and 200 kips, respectively.

2.2 Scope of Work

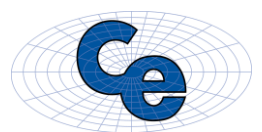
This report presents the results of our geotechnical exploration and evaluation performed for the proposed development. The purpose of this study was to perform a geotechnical exploration within the proposed area of development and provide recommendations for site design and construction.

The services rendered by this firm included a site reconnaissance, drilling and sampling of fourteen (14) soil test borings, performing engineering analyses of obtained information, and preparation of this report. Specifically, our geotechnical report addresses the following:

- Description of existing conditions including detailed boring records, soil profiles, site maps, and an infiltration test/boring location plan;
- A description of the area and site geologic conditions;
- Recommendations for site preparation, excavation and grading, backfilling and compaction;
- Recommendation for subgrade preparation and slab-on-grade construction recommendations;
- Recommendation for foundation design and construction including allowable bearing pressure and settlements;
- Excavation conditions and the presence of very dense materials and the degree of difficulty of excavation;
- Lateral earth pressures for retaining walls; and
- Seismic information based on the International Building Code 2018.



Note: The scope of our geotechnical services did not include any environmental assessment or exploration for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site.



3.0 FIELD EXPLORATION AND LABORATORY PROGRAM

3.1 Field Exploration

The field exploration consisted of a reconnaissance and performing fourteen (14) soil test borings within the proposed development area. Each soil test boring location was plotted on the provided site plan that was overlain onto a Google Earth Map. The coordinate of each soil test boring location was then determined from Google Earth and located at the subject site utilizing a Trimble Global Positioning System (GPS). While the GPS device can locate points with a reasonable degree of accuracy, the precision can be affected by weather conditions, interference by external electromagnetic signals, available view of the horizon and other factors. The soil test boring locations should be considered accurate only to the degree implied by the method of location. If more exact locations are desired, we recommend that a professional survey be engaged to locate the borings. The location of each soil test boring is depicted on the Boring Location Plan included in the Appendix of this report as Figure 3.

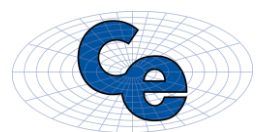
The sampling and penetration procedures of the soil test borings were performed in accordance with ASTM D1586, using a power rotary drill. The standard penetration tests were accomplished by driving a standard 1-³/₈" I.D. and 2" O.D. split spoon sampler with an automatic 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler a total of 18 inches, in 6-inch increments, was recorded. The Standard Penetration Test (SPT) value or "N" value is the summation of the last two 6-inch increments and is illustrated on the Boring Log Records adjacent to their corresponding depths, included in Appendix of this report. In very dense soils or weathered rock, the sample is driven a few inches rather than the 6-inch increment and the number of blows required versus the penetration depth is recorded. The penetration resistance or SPT value is used as an index to derive soil parameters from various empirical correlations. At the conclusion of our subsurface drilling, each of the boreholes was backfilled with soil cuttings prior to demobilization from the site.

All recovered soil samples from our field exploration will be held in storage for a minimum of three (3) months within Contour's soil laboratory in Norcross, Georgia.

3.2 Laboratory Program

Representative portions of each recovered split-spoon sample were transported to our laboratory for further visual classification and testing. Using the Unified Soil Classification System (ASTM D2487), the subsoil conditions are stratified and described in an illustrated form of soil profiles on the Boring Log Records included in the Appendix. In addition, the following tests were performed on representative samples:

- Atterberg Limits (ASTM D4318)
- Natural Moisture Content (ASTM D2216)
- Sieve Analysis (ASTM D422)
- California Bearing Ratio (ASTM D1883)
- Standard Proctor (ASTD D698)



4.0 SITE AND SUBSURFACE CONDITIONS

4.1 Area Geology

The site is located in the Coastal Plain Geologic Region. The fall line marks the beginning of the Coastal Plain and represents the place where the younger sedimentary rocks and sediments of the Coastal Plain rest atop the much older rocks of the Piedmont geologic province. Coastal Plain sediments occur as layers, or strata, that incline gently into the subsurface toward the east of the state. Because of this, the oldest Coastal Plain strata seen at the surface occur right at the fall line and are covered by increasingly younger layers to the south and east. These rock layers record the long history of the Coastal Plain and show that sea level has risen and fallen many times during the last 100 million+ years. When sea level was high, a shallow seaway covered much or even all of the Coastal Plain. During times of lower sea level, the area was dry land, with large rivers and broad floodplains. For this reason, Coastal Plain strata consist of alternating marine sediments (those deposited in the sea) and non-marine sediments (those formed on land).

The Coastal Plain is composed of undeformed, virtually unaltered, sedimentary rock layers and sediments whose ages range from the late Cretaceous to present Holocene sediments of the coast. The sedimentary rocks of the Coastal Plain partly consist of sediment eroded from the Piedmont over the last 100 million years and limestones generated by marine organisms and processes at sea. The sedimentary rocks and sediment primarily consist of sandstones, shales, limestones, sands, silts, and clays.

4.2 Subsurface Conditions

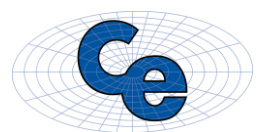
Beneath the surficial topsoil layer, the soil test borings encountered fill materials and residual soils to planned termination depths ranging from 10 to 20 feet below the existing ground surface (bgs). The topsoil thickness was approximately 3 inches, and may vary across the site, and may be thicker intermittent of the borings.

Coastal Plain soil, formed by the deposition of marine sediments, were encountered beneath the surface materials and extended to termination depths of 10 to 20 feet bgs. The Coastal Plain soils were classified Medium dense, silty, and clayey sands (SM & SC), and very stiff to hard lean and fat sandy clays (CL & CH).

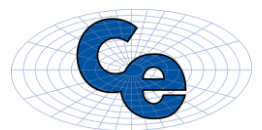
4.3 Groundwater Conditions

During our field activities, the measurement to the depth below the existing ground surface to the groundwater table was attempted immediately after the completion of each boring. Groundwater was not encountered during our field exploration. Groundwater in this area will fluctuate in response to local variations of precipitation and temperature and may be different at other times and areas.

Individual soil boring profiles are depicted on the Boring Log Records included in the Appendix. Two Subsurface Profile Plates illustrating the subsurface soil is also included Appendix. Additionally, stratification lines represent the approximate boundaries between soil types. The



actual transitions may be more gradual than depicted. Any elevation data on the boring logs, profiles, or in the report was interpolated from the provided topographical data.



5.0 EARTHWORK RECOMMENDATIONS

5.1 Site Preparation

Prior to the commencement of construction, existing fill, vegetation, topsoil, debris, and any other non-soil deleterious materials that fall within the limits of the proposed construction should be removed. Upon completion of the clearing and stripping, all subgrade areas should be proof-rolled with a 20-ton loaded tandem-axle dump truck or other pneumatic-tired vehicle of similar size and weight. The purpose of the proof-roll is to locate soft, weak, or excessively wet soils present at the time of construction. Any unstable subgrades or unsuitable materials observed during proof-rolling operations (materials that exhibit excessive pumping or rutting) should be undercut and replaced with structural fill or stabilized in place with crushed stone prior to foundation and pavement construction and/or additional fill placement.

High Plasticity Clays

High plasticity clays were encountered in the top 5 feet of borings B-2 and I-1. If these soils are encountered in structural areas during grading operation, they will need to be undercut to a depth of at least two feet below finished grade and replaced with well-compacted structural fill or well-compacted graded aggregate base (GAB). These soils are also not suitable for reuse in structural areas. If encountered in excavations, they may be utilized in non-structural (i.e., grassed areas) or should be wasted offsite.

5.2 Excavation Conditions

No auger refusal was encountered in the borings explored. Therefore, we do not believe difficult excavation techniques will be required.

5.3 Structural Fill

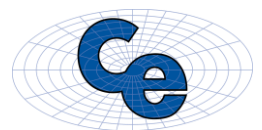
The structural fill to be used on the site should be evaluated and approved by the geotechnical engineer. All structural fill should be free of organics, contain rock pieces no greater than 4 inches in diameter, and moisture conditioned to maintain a moisture content within three percentage points above and below the soil's optimum moisture content as determined by the standard Proctor test (ASTM D698). Therefore, laboratory tests including Standard Proctors (ASTM D698), Atterberg Limits Tests (ASTM D4318), Soil Particle Size Analysis (ASTM D422), and Organic Content Matter (ASTM D2974) will be required during construction. The grading contractor should be prepared to moisture condition selected fill soils as required during fill placement.

Off-Site Borrow Materials

Off-site borrow materials may be used as structural fill provided they have a liquid limit (LL) and a plastic index (PI) not exceeding 40 and 20 percent and have a maximum dry density of at least 95 pcf, and moisture conditioned to maintain a moisture content within two percentage points above and below the optimum moisture contents.

Suitability of On-Site Soils

The on-site residual soils are suitable for reuse as structural fill with the exception of any soils that have a liquid limit (LL) and a plastic index (PI) not exceeding 40 and 20 percent and a



maximum dry density less than 95 pcf, and provided that the soils are placed in accordance to the requirements specified in this report. The contractor should be prepared to moisture condition the onsite soils during grading operations. The onsite soils should be carefully moisture controlled due to high fines content. These soil types are moisture sensitive and will require significant drying efforts (possibly including chemical treatment) during the wetter months/extended periods of rainfall. We believe it would be prudent to schedule grading activities for the warmer/dryer season.

Placement and Compaction Requirements

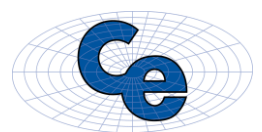
Structural fill should be placed in thin loose lifts not exceeding 8 inches in thickness and tested by a soils technician to determine the compaction percentage. Contour recommends that the following minimum level of compaction:

- Building Areas - Compact the fill to 98 percent of the soil's maximum standard Proctor density value (ASTM D698). In cut areas, the subgrade should be proof-rolled and if found unstable, it should be scarified and re-compacted to 98 percent of the soil's maximum standard Proctor density value.
- Pavement Areas - Compact the upper 18 inches of subgrade in fill areas and the upper 12 inches in cut areas to 98 percent of the soil's maximum standard Proctor density value (ASTM D698) and 95 percent of the soil's maximum standard Proctor density value below this level.

5.4 Groundwater and Drainage Considerations

Groundwater was not encountered in any of the borings performed during this exploration. Groundwater levels in this area will fluctuate in response to local variations of precipitation and temperature and may be different at other times and areas. Further, due to the clayey nature of the soils on site migration of water may take significantly longer than that of sandy soils. We measured groundwater directly after drilling, and therefore, the water may not have had the time needed to migrate into the boring before backfilling of the boring. Should groundwater be encountered during site development, especially in the tank pit area, the contractor should implement dewatering techniques to maintain groundwater levels a minimum of 2 feet below working subgrades. The contractor should establish ground water levels at the time of construction.

Site drainage should be planned and maintained to promote drainage away from all improvements during and after construction. Moreover, permanent site drainage should be established to prevent subgrade soils beneath pavements and slabs from becoming saturated and to minimize potential distress. Surface drainage should be directed away from proposed building structures. All roof drains should be tied directly to a storm sewer by closed pipes. Landscape irrigation should also be minimized to reduce future maintenance problems. Additionally, maximum practical grades should be utilized to reduce the likelihood of ponding water on or adjacent to flatworks. Care should be taken to properly seal and maintain all flatwork that abuts building structures to minimize the intrusion of water.



6.0 DESIGN RECOMMENDATIONS

6.1 Foundation Support

Based on boring data, assumed loading conditions, and after the completion of recommended site preparation, the proposed buildings may be supported on a conventional shallow foundation system. A maximum allowable net bearing pressure of 2,500 pounds per square foot may be used for the design of the shallow foundation systems bearing on residual soils and/or new structural fill. Any soft areas or organic laden materials encountered should be undercut and replaced with crushed stone.

To reduce the possibility of shear failure, wall bearing and column foundations should be designed with a minimum width of 18 and 24 inches, respectively. For frost protection, exterior wall bearing and column foundations should be designed with a minimum embedment depth of 18 inches, while interior foundations should be designed with a minimum embedment depth of 12 inches. The embedment depth should be measured from the base of the foundation to lowest adjacent outside grade.

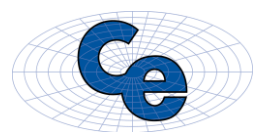
Bottoms of foundation excavations should be evaluated by a geotechnical engineer prior to placement of reinforcing steel and concrete to verify that adequate bearing materials are present and that all debris, mud, and loose, frozen or water-softened soils are removed. Any soils that have a liquid limit and plasticity index higher than 40 and 20 respectively should be undercut two feet below finished elevation and replaced with either well-compacted structural fill or well-compacted GAB.

Foundation excavations should be concreted as soon as practical after they are excavated. Water should not be allowed to pond in any excavation. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom to minimize damage to the bearing surface from weather or construction activities. Foundation concrete should not be placed on frozen or saturated subgrades.

Upon completion of the recommendations and using the assumed structural loading, we anticipate total settlement of 1-inch or less and differential settlement of approximately half of the total settlement. Careful field control will contribute substantially to minimizing potential settlements.

6.2 Floor Support

After completion of the site preparation and evaluation recommendations (Section 5.0), the building floor slab may be directly supported on residual soils or structural fill. Provided the slab subgrade is prepared in accordance with our recommendations, a subgrade modulus reaction (K) of 100 pounds per cubic inch (pci, pounds per square inch per inch of deflection) may be used for slab design for slab loads of less than 100 psf. Expansion and contraction joints should be used to isolate all floor slabs from the load bearing walls and/or isolated columns. This will allow for possible differential movement and diminish the potential of cracking the floor slabs.



6.3 Concrete Retaining/Below Grade Wall Design

Any below grade or on-site concrete below grade walls will be subjected to lateral earth pressures. Walls that are relatively rigid or fixed at the top and bottom may be subjected to “at-rest” earth pressures. Walls that are allowed to have sufficient movement and not fixed at the top will be subjected to “active” pressures.

The following lateral earth pressure parameters are recommended for design in Coastal Plain soils or structural fill:

Earth Pressure Coefficient	Earth Pressure Value	Equivalent Fluid Density (pcf)
At-Rest (K_0)	0.53	63.6
Active (K_A)	0.36	43.2
Passive (K_P)	2.77	332

These values assume that the wall has horizontal backfill and no surcharge loads such as from adjacent structures. A moist unit weight of 120 pounds cubic foot and a sliding coefficient of 0.53 may be used in the *ultimate design value* of retaining walls. Typically, a factor of safety of 1.5 is used for active earth pressure and 2.0 for passive earth pressure.

The recommended equivalent fluid pressures assume that constantly functioning drainage systems are installed between walls and soil backfill to prevent the accidental buildup of hydrostatic pressures and lateral stresses in excess of those stated. If a functioning drainage system is not installed, then lateral earth pressures should be determined using the buoyant weight of the soil (approximately 58 pcf). Hydrostatic pressures calculated with the unit weight of water (62.4 pcf) should be added to these earth pressures to obtain the total stresses for design.

The surcharge and lateral loads from tractors and other heavy equipment operating within 10 feet of below grade walls should be added to the lateral loads cited in this section of the report. If foundations or other surcharge loadings are located a short distance outside below grade walls, they may also exert appreciable additional lateral pressures that must be considered.

The retaining wall/below grade wall recommendations listed above should not be correlated with soil parameters for use in Segmental Retaining Wall/MSE Wall design. In the event that Retaining Walls are constructed as MSE Walls, we recommend that design soil parameters be established through appropriate laboratory testing by the wall designer.

6.4 Pavement Recommendations

We have based this design on the specifications given by RaceTrac Petroleum, Inc., and have based this design on a CBR value of 5 percent. While the onsite CBR result is lower than this, we believe that any soils lower than a five will be undercut. Based on our knowledge of the geology we have recommended a CBR design value of 5. If the traffic loading information given is changed then Contour Engineering will need to be notified in order to modify our recommendations on

the pavement sections. Design procedures are based on the ACI 330.2R – 17. The materials recommended for the pavement design are referenced to the Georgia Department of Transportation (GDOT) Standard Specifications for Testing Manual. Based on the subsurface conditions, and assuming our grading recommendations will be implemented as specified, the following presents our recommendations regarding typical pavement sections and materials.

We recommend that a proof-roll be performed with a fully loaded tandem axle dump truck to determine if there is any unsuitable material located throughout the proposed site. Any areas that deflect excessively under proof-rolling should be undercut, as recommended by the Geotechnical Engineer, to confirm that all unsuitable materials are removed and to prevent unnecessary undercutting of suitable materials. Remediation may include undercutting and replacement with compacted structural fill, or installation of geogrid with the use of additional well compacted GAB.

RIGID PAVEMENT DESIGN	(Minimum Thickness)	
	Standard Duty (Inches)	Heavy Duty (Inches)
Portland Cement Concrete	6	8
Graded Aggregate Base	6	6

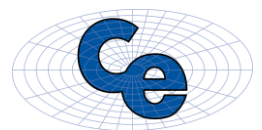
The compaction, quality and gradation of the GAB crushed stone base will directly affect the quality and life of the pavement section. Consequently, we recommend a minimum compaction of 98 percent of the maximum dry density for the GAB crushed stone material as determined by either the modified Proctor compaction test (ASTM D1557, Method D) or the Modified AASHTO (T-180).

A soil engineering technician working under the direction of a geotechnical engineer should observe placement and compaction of the base course material and perform density tests to confirm that the material has been placed in accordance with our recommendations.

The concrete pavement should have the minimum thickness listed above. The pavement should include temperature reinforcement and have maximum joint spacing as recommended by ACI 330. The concrete pavement should have a minimum 28-day compressive strength of 4,000 pounds per inch (psi) with a modulus rupture of 630 psi. Placing the 4-inch crushed stone base course beneath the concrete pavement will prevent the pumping of the soil fines through the construction joints.

6.5 Underground Storage Tanks

It is assumed the tanks will have a maximum embedment depth of 20 feet below the existing ground surface. Based on the borings, we do not anticipate that temporary dewatering systems will be required at this depth. However, with the high clay content of the soils on site the stabilized groundwater table might not be evident until after the excavation has taken place. If the groundwater migrates into the tank pit during construction dewatering measures will be required to lower water levels to two feet below construction grade.

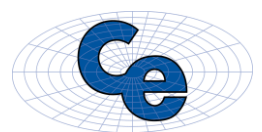


When the fluid level within the fuel tank structure is maintained at or above the surrounding groundwater level, no net buoyancy will occur. However, when these structures are drained for maintenance or as fluid levels fluctuate within the tanks, a positive means of uplift protection may be necessary, depending on the future groundwater levels. Hydrostatic uplift forces can be resisted in several ways including:

- Addition of dead weight to the structure.
- Mobilizing the dead weight of the soil surrounding the structure through extension of footings outside the perimeter of the structure.
- Use of a permanent gravity or mechanical dewatering system that is operated only when the structure is to be drained.

6.6 Seismic Recommendations

Based on the 2018 International Building Code (IBC), boring data, and the geological features of the Coastal Plains Physiographic Province of Georgia, it is our opinion that the Seismic Site Classification for the project site is "D". The soil profile named "Stiff Soil Profile" was determined from Chapter 20 of ASCE-7.



7.0 QUALIFICATION OF RECOMMENDATIONS

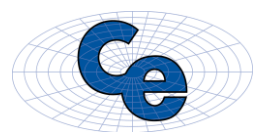
This report has been prepared based on currently accepted geotechnical engineering principles and practices in the local area for the specific application of this project.

The analyses and recommendations presented in this report are based upon preliminary information and our understanding of the Site and the data obtained from our field exploration. If there are any revisions to the plans for this project, we should be permitted to determine if the recommendations must be modified. The nature and extent of variations between borings will not be evident until the course of construction. If such variations become evident, it may be necessary to submit supplementary recommendations.

Regardless of the thoroughness of a geotechnical study, there is always a possibility that subsurface conditions will be different from those at the boring locations; that conditions will not be as anticipated by the designers or contractors; or that the construction process will alter soil conditions. Therefore, the geotechnical engineer's representative should observe and confirm that the conditions indicated by the geotechnical exploration actually exist.

Once final design plans and specifications are complete, and loading criterion for each building has been determined, we recommend that Contour Engineering, LLC be provided the opportunity to review the final design and specifications in order that earthwork and foundation recommendations are properly interpreted and implemented.

This report and all of the contents herein are issued exclusively for use by RaceTrac Petroleum, Inc. No other person or entity may rely on this report without written authorization from Contour Engineering, LLC. Any use, reliance on, or decisions to be made based on this report by a third party are the responsibilities of such third parties.



APPENDIX

Figure 1 - Site Vicinity Map

Figure 2 - Aerial View of Site

Figure 3 - Boring Location Plan

Subsurface Profiles (1)

Boring Log Records (14)

Soil Classification Chart

Laboratory Results

Important Information about This Geotechnical-Engineering Report

